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(71) Applicant (for AE, AG, AU, BB, BZ, CA, CY, GB, GD, GH, GM, IE, IL, KE, LC, LK, LS, MN, MW, NZ, SD, SG, SL, SZ, TT, TZ, UG, ZA, ZW only): **UNILEVER PLC [GB/GB];** Unilever House, Blackfriars, London EC4P 4BQ (GB).

(71) Applicant (for AL, AM, AT, AZ, BA, BE, BF, BG, BJ, BR, BY, CF, CG, CH, CI, CM, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, FR, GA, GE, GN, GR, GW, HR, HU, ID, IS, IT, JP, KG, KP, KR, KZ, LR, LT, LU, LV, MA, MC, MD, MG, MK, ML, MR, MX, MZ, NE, NL, NO, PL, PT, RO, RU, SE, SI, SK, SN, TD, TG, TJ, TM, TR, UA, UZ, VN, YU only): **UNILEVER NV [NL/NL];** Weena 455, NL-3013 AL Rotterdam (NL).

(71) Applicant (for IN only): **HINDUSTAN LEVER LIMITED [IN/IN];** Hindustan Lever House, 165/166 Backbay Reclamation, Mumbai 400 020, Maharashtra (IN).

(72) Inventors: **MA, Zhuning;** Unilever Home & Personal Care USA, 3100 East Golf Road, Rolling Meadows, Chicago, IL 60008 (US). **WYDILA, John, Edward;** 1261

Cranbrook Drive, Schaumburg, IL 60193 (US). **DAILEY, Mark;** Unilever Home & Personal Care USA, 3100 East Golf Road, Rolling Meadows, Chicago, IL 60008 (US). **BRANDT, Lorelei, Marie;** Unilever Home & Personal Care USA, 3100 East Golf Road, Rolling Meadows, Chicago, IL 60008 (US). **NEILL, Paul, Howard;** Unilever Home & Personal Care USA, 3100 East Golf Road, Rolling Meadows, Chicago, IL 60008 (US).

(74) Agents: **CHADWICK, Richard, John et al.;** Unilever PLC, Patent Department, Colworth House, Sharnbrook, Bedford, Bedfordshire MK44 1LQ (GB).

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(54) Title: **LEAVE-ON OR RINSE-OUT HAIR CARE CONDITIONER COMPOSITIONS CONTAINING SILICONE QUATERNARY COMPOUNDS AND THICKENERS**

(57) Abstract: The present invention relates to a leave-on or rinse-out hair conditioning or styling aid composition that comprises: a) a silicone quaternary compound, b) a cationic thickener, and c) a carrier, wherein said carrier is water, or a hydroalcoholic solvent; and wherein said composition is substantially lacking in fatty alcohol.

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LEAVE-ON OR RINSE-OUT HAIR CARE CONDITIONER COMPOSITIONS
CONTAINING SILICONE QUATERNARY COMPOUNDS AND THICKENERS

5 TECHNICAL FIELD

The present invention relates hair conditioning compositions comprising a silicone quaternary compound and a cationic thickener which provide improved styling benefits.

10

BACKGROUND OF THE INVENTION

Most individuals buy and use a hair shampoo for its cleansing properties. In addition to having clean hair, a consumer also desires sufficiently conditioned hair that holds a preset configuration. However, hair shampoos are generally formulated with highly effective anionic surfactants that primarily clean as opposed to condition the hair. Anionic surfactants not only remove the dirt and soil from hair, but also remove sebum naturally present on the surface of hair fibers. Therefore, the desirable cleansing properties of anionic surfactants also can leave hair in a cosmetically unsatisfactory condition. Shampoos also do not detangle wet hair and do not impart residual conditioning benefits to dry hair such as manageability or styleability of hair sets.

In general, shampoo compositions containing anionic surfactants, or nonionic surfactants or amphoteric surfactants, leave hair with an undesirable harsh, dull and dry touch, or feel, after the hair is shampooed and then rinsed with water. Furthermore, thoroughly cleansed hair also is extremely difficult to comb, in either the wet or

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the dry state, because the individual hair fibers tend to snarl, kink, and interlock with each other. In addition, incompletely dried hair, such as hair dried with a towel, has poor brushing properties, and after complete drying, the hair does not set well. The combing or brushing properties of dry hair remain poor, and the hair has undesirable electrostatic properties in a low humidity atmosphere that causes the hair to "fly away" thereby further reducing the brushing properties of the hair.

The unsatisfactory combing or brushing properties of hair immediately after shampooing or during trimming treatments after shampooing also causes hair damage such as split ends or hair breakage. In addition the natural luster and resiliency of hair is reduced. The overall unsatisfactory condition of shampooed hair often makes necessary a subsequent post shampoo treatment of the hair with a conditioning composition to improve these undesirable physical characteristics. Conditioning compositions typically are applied separately from the hair shampoo, and usually are rinses, cream-like emulsions or lotions containing a cationic compound.

Therefore, the consumer has traditionally shampooed the hair to cleanse the hair, and followed this with the application of a conditioner composition to improve wet combing. The commonly accepted method has been to shampoo the hair, followed by rinsing the hair, and then applying a conditioner composition, followed by a second rinse. The wet combing problem has been solved by treating shampooed hair with a conditioner composition that coats the hair

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shaft and causes individual hair fibers to resist tangling and matting because of the conditioner residue retained on the hair shaft.

5 Conventional leave-on or rinse-out hair conditioners rely on fatty alcohols to build viscosity, and on alkyl quaternaries and silicones to provide conditioning. While these conventional leave-on or rinse-out hair conditioners, do condition the hair, the fatty alcohols tend to deposit on
10 the hair surface along with the conditioning agents, thereby weighing down the hair. Therefore, hair that has been conditioned with these conventional leave-on or rinse-out hair conditioners tends to have less body than unconditioned hair.

15

It would be desirable to develop a leave-on or rinse-out ~~hair conditioner composition that does not thereby~~

substantially decrease natural hair body. It would also be desirable for a leave-on or rinse-out hair conditioner to
20 incorporate a water-soluble styling resin, to deliver a hair styling benefit. It would also be desirable to provide such a leave-on or rinse-out styling conditioner at low cost. Compositions of the present invention have these properties.

25 Publications related to the invention are as follows:

U.S. Patent No. 5,679,114 discloses hair treatment compositions for temporarily coloring the hair which contain a polymer and a metal containing pigment.

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U.S. Patent No. 5,034,218 discloses stable conditioning shampoos containing a compatible anionic surfactant/cationic conditioning agent, non-volatile silicone emulsion.

- 5 U.S. Patent No. 5,665,337 discloses compositions which comprise from about 0.25% to about 70% of a copolymer component comprising from about 1.5% to about 70% of a silicone-grafted adhesive hair styling copolymer having a weight average molecular weight from about 300,000 to about
10 5,000,000 and from about 30% to about 98.5% of a hydrophobic volatile solvent.

- U.S. Patent No. 4,749,565 discloses cosmetic compositions based on cationic silicone, water-soluble
15 heteropolysaccharide and electrolyte.

SUMMARY OF THE INVENTION

- The present invention relates to a hair conditioning
20 composition comprising:

- a) a silicone quaternary compound;
- b) a cationic thickener; and
- c) water or a hydroalcoholic solvent,

25

which is substantially free of fatty alcohol.

- The present invention also relates to a method for conditioning and styling hair which comprises contacting
30 said hair with an effective amount of a composition of the invention.

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DETAILED DESCRIPTION OF THE INVENTIONDefinitions

5 As used herein % means weight % of the total composition, unless otherwise indicated.

"Fatty alcohol" means an alcohol of 8 carbons or more.

10 "Substantially lacking in fatty alcohol" means a level of fatty alcohol in the composition that is so low that upon use on the hair, said fatty alcohol does not cause the hair to lose its natural body. Usually the level of fatty
alcohols in the compositions of the invention is less than
15 about 0.2% fatty alcohol. More preferably, compositions of the invention has than 0.1% fatty alcohol or less than 0.05%
fatty alcohol.

The term "leave-on" refers to a hair care composition that
20 is applied to the hair and not further subjected to a rinsing step.

The term "rinse-out" as contrasted with the term "leave-on" is used herein to mean compositions which are used in a
25 context whereby the composition is ultimately rinsed or washed from the hair either after or during the application of the product.

Leave-on or rinse-out compositions of the invention may take
30 the form of providing the hair with styling benefits, and in particular allowing the hair to retain a given style for a

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longer period of time. In this context the word "style" is given its usual meaning in the art, which is the act of creating a style in the hair, often after some initial drying. In any event the act of styling usually requires
5 that the hair retain a given configuration, with individual hair shafts generally retaining their configuration relative to each other.

The benefits from compositions of the invention may be
10 derived whether the hair is dried with a hair dryer, or allowed to dry naturally.

Traditional hair conditioning compositions rely upon fatty alcohols to build viscosity. However, fatty alcohols tend
15 to deposit on the hair surface along with the conditioning agents resulting in less body than unconditioned hair. The compositions of the invention are substantially free of fatty alcohol and thereby avoid this problem. After treatment with compositions of the invention, hair is left
20 with more of its natural body.

Conditioning Compositions

The starting materials used in preparing the compositions of
25 the invention are either known or can be prepared according to known methods. Compositions of the invention can be prepared by known methods, or by methods that are analogous to known methods.

30 The hair conditioning compositions of the present invention can be used as either leave-on or rinse-out products.

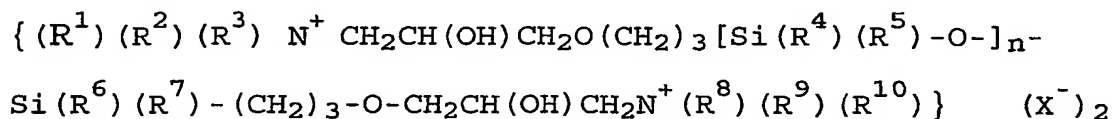
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The compositions of the invention are oil-in-water dispersions and/or emulsions. In compositions of the invention, there is a combination of a silicone quaternary compound and a cationic thickener.

The ingredients employed in the compositions of the invention are as follows:

10 Silicone Quaternary Compounds

Suitable silicone quaternary ammonium compounds that may be employed in the compositions of the invention are those having the general formula:



wherein R^1 and R^{10} may be the same or different and may be independently selected from H, saturated or unsaturated long or short chain alk(en)yl, branched chain alk(en)yl and C_5-C_8 cyclic ring systems;

R^2 thru R^9 may be the same or different and may be independently selected from H, straight or branched chain lower alk(en)yl, and C_5-C_8 cyclic ring systems;

n is a number within the range of about 60 to about 120, preferably about 80, and

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X⁻ is preferably acetate, but may instead be for example halide, organic carboxylate, organic sulphonate or the like. Suitable quaternary silicone polymers of this class are described in EP-A-0 530 974.

5

Preferred silicone quaternary ammonium compounds include cationic silicone derivatives, such as Quaternium-80, having the structure set forth on volume 1, pages 631 and 632 of the International Cosmetic Ingredient Dictionary, fifth
10 edition, 1993, editor Wenninger et al.

Cationic Thickener

Compositions of the invention also comprise a cationic
15 thickener. Non-limiting examples of cationic thickeners that can be used in compositions of the invention include cationic acrylates, most preferably Salcare SC 96. Salcare SC 96 is available from Ciba Specialty Chemicals, as a liquid dispersion polymer composition.

20

The composition of Salcare SC 96 is approximately 44% by weight Polyquaternium-37 polymer. Polyquaternium-37 polymer is a water swellable polymer and is also referred to as N,N,N-trimethyl-2((methyl-1-oxo-2-propenyl)oxy), chloride
25 polymer and which has the chemical structure set forth at page 1145 having the structure set forth on volume 2, page 1145 of the International Cosmetic Ingredient Dictionary, eighth edition, 2000, editor Wenninger et al.

30 The remainder of the Salcare SC 96 polymer composition is described as comprising a mixture of propylene

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glycol/dicaprylate/dicaprate 50% propyleneglycol-1 trideceth
6 at 6%.

Other cationic thickeners which may be used include Salcare
5 95 which is dimethylaminoethylmethacrylate homopolymer; SC
10 which is dimethylammonium chloride acrylamide; and SC 60
which is copolymer of acrylamidylpropyltriammonium chloride.

Carrier

10

Compositions of the invention also comprise water,
preferably, deionized water. The compositions of the
invention may also comprise hydroalcoholic solvent.

15 Optional Ingredients

Non-volatile Silicone Compounds

Other non-volatile silicone quaternary compounds that may be
20 used are silicone compounds that are included in the oil
phase of compositions of the invention. The preferred other
silicone compounds are polyalkylsiloxanes such as
polydimethylsiloxane, and polymethylphenylsiloxane.
Polydimethylsiloxanes, which are also known as dimethicones,
25 are especially preferred. The polyalkylsiloxanes that can
be used include, for example, polydimethylsiloxanes. These
silicone compounds are available, for example, from the
General Electric Company in their Viscasil R and SF 96
series, and from Dow Corning in their Dow Corning 200
30 series.

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Polyalkylaryl siloxane fluids can also be used and include, for example, polymethylphenylsiloxanes. These siloxanes are available, for example, from the General Electric Company as SF 1075 methyl phenyl fluid or from Dow Corning as 556

5 Cosmetic Grade Fluid.

The silicone compounds that can be used also include, for example, a polypropylene oxide modified polydimethylsiloxane, although ethylene oxide or mixtures of
10 ethylene oxide and propylene oxide modified polydimethylsiloxanes can also be used. The ethylene oxide and polypropylene oxide level should be sufficiently low so as not to interfere with the dispersibility characteristics of the silicone. These materials are also known as
15 dimethicone copolyols.

Other silicone compounds include amino substituted materials such as suitable alkylamino substituted silicone compounds. An especially preferred amino substituted silicone is the
20 polymer known as trimethylsilylamodimethicone. A preferred polymer of this class is available from Union Carbide under the name "UCAR SILICONE ALE 56." References disclosing suitable nonvolatile dispersed silicone compounds include U.S. Patent No. 2,826,551, to Geen; U.S. Patent No.
25 3,964,500, to Drakoff, issued June 22, 1976; U.S. Patent No. 4,364,837, to Pader; and British Patent No. 849,433, to Woolston.

Another nonvolatile dispersed silicone that can be
30 especially useful is a silicone gum. The term "silicone gum", as used herein, means a polyorganosiloxane material

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having a viscosity at 250 degrees C of greater than or equal to 1,000,000 centistokes. It is recognized that the silicone gums described herein can also have some overlap with the above-disclosed silicone compounds. This overlap is not intended as a limitation on any of these materials. Silicone gums are described in U.S. Patent No. 4,152,416, to Spitzer et al., issued May 1, 1979 and Noll, Walter, Chemistry and Technology of Silicones, New York: Academic Press 1968. Also describing silicone gums are General Electric Silicone Rubber Product Data Sheets SE 30, SE 33, SE 54 and SE 76. The "silicone gums" will typically have a mass molecular weight in excess of about 200,000, generally between about 200,000 and about 1,000,000. Specific examples include polydimethylsiloxane, poly(dimethylsiloxane methylvinylsiloxane) copolymer, poly (dimethylsiloxane diphenylsiloxane methylvinylsiloxane) copolymer and mixtures thereof.

Also useful are silicone resins, which are highly crosslinked polymeric siloxane systems. The crosslinking is introduced through the incorporation of tri- functional and tetra-functional silanes with mono-functional silanes or difunctional silanes, or both types of silanes during manufacture of the silicone resin. As is well understood in the art, the degree of crosslinking that is required in order to result in a silicone resin will vary according to the specific silane units incorporated into the silicone resin. In general, silicone materials which have a sufficient level of trifunctional and tetrafunctional siloxane monomer units, and hence, a sufficient level of crosslinking, such that they dry down to a rigid, or hard

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film are considered to be silicone resins. The ratio of oxygen atoms to silicon atoms is indicative of the level of crosslinking in a particular silicone material. Silicone materials that have at least about 1.0 oxygen atoms per
5 silicon atom will generally be silicone resins herein. Preferably, the ratio of oxygen to silicon atoms is at least about 1.2 to 1.0. Silanes used in the manufacture of silicone resins include monomethyl-, dimethyl-, trimethyl-, monophenyl-, diphenyl-, methylphenyl-, and monovinyl-, with
10 the methyl substituted silanes being most commonly utilized. General Electric as GE SS4230 and SS4267 offers preferred resins. Commercially available silicone resins will generally be supplied in a dissolved form in a low viscosity volatile or nonvolatile silicone fluid. The silicone resins
15 for use herein can be supplied and incorporated into the present compositions in such dissolved form, as will be readily apparent to those skilled in the art.

Other useful silicone resins are silicone resin powders such
20 as the material given the CTFA designation polymethylsilsequioxane, which is commercially available as "Tospearl" from Toshiba Silicones.

The method of manufacturing these silicone compounds, can be
25 found in Encyclopedia of Polymer Science and Engineering, Volume 15, Second Edition, pp. 204-308, John Wiley & Sons, Inc., 1989.

Commercially available silicone compounds which are useful
30 herein include Dimethicone with tradename D-130, cetyl Dimethicone with tradename DC2502, stearyl Dimethicone with

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tradename DC2503, emulsified polydimethyl siloxanes with tradenames DC1664 and DC1784, and alkyl grafted copolymer silicone emulsion with tradename DC2-2845; all available from Dow Corning Corporation, and emulsion polymerized Dimethiconol available from Toshiba Silicone as described in GB application 2,303,857.

Mixtures of the silicone quaternary compounds described above can also be used in the compositions of the invention.

10

Amino Silicones

An especially preferred cationic silicone derivative is that sold under the tradename "Dow Corning 929 (DC 929)" cationic emulsion by DOW CHEMICAL COMPANY, which contains in combination:

- (1) "amodimethicone,"
- (2) "tallowtrimonium chloride," and
- 20 (3) "nonoxynol -10."

Volatile Silicones

The silicone oil phase of the compositions of the invention can also comprise a volatile silicone oil. By "volatile" is meant that the oil has a boiling point less than about 225°C at 760 mm Hg. Exemplary volatile silicone compounds include, but are not limited to, volatile, low molecular weight polydimethylsiloxane compounds. They can be either a linear or a cyclic polydimethylsiloxane compound having a viscosity from about 0.5 to about 10 cst (centistokes). The

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preferred linear polydimethylsiloxane compounds can have a viscosity range from about 0.5 to 10cst. The preferred volatile polydimethylsiloxanes have a viscosity in the range of about 0.5 to about 6 cst.

5

The cyclic, volatile, low molecular weight polydimethylsiloxanes, designated in the CTFA Dictionary as cyclomethicones, are optionally used in compositions of the present invention. The cyclic volatile siloxanes which can
10 be D4, D5, or D6, and mixtures thereof); boil at atmospheric pressure at from about 35°C to about 250°C. The polydimethyl cyclosiloxanes having an average of about 4 to about 5 repeating units per molecule are especially preferred. Suitable cyclomethicones are available commercially under
15 the trade names DOW CORNING 244 Fluid, DOW CORNING 245 Fluid, DOW CORNING 344 Fluid and DOW CORNING 345 Fluid from DOW CORNING Corporation, Midland, MI., and SILICONE SF-1173 and SILICONE SF-1202 from General Electric, Waterford, NY.

20 An example of a linear, low molecular weight, volatile polydimethylsiloxane compound is designated in the CTFA Dictionary as decamethyltetrasiloxane, available commercially under the trade name DOW CORNING 200 Fluid having a viscosity of 0.5 to 1.5 cst. Other linear
25 polydimethylsiloxanes include octamethyltrisiloxane, decamethylpentasiloxane and mixtures thereof which also may be useful in the compositions of the invention.

Other volatile silicones useful in compositions of the
30 invention include phenyl pentamethyldisiloxane, phenyl

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pentaethyldisiloxane, methoxy propylheptamethyldisiloxane, and mixtures thereof.

Mixtures of the silicones described above can also be used
5 in the compositions of the invention.

Styling Resins

When it is desired to produce a composition of the invention
10 that also has styling properties, a water-soluble styling resin can be included in such compositions.

Water-soluble styling resins include Copolymer 845, Gafquat 755N, Gafquat H5100, Styleze CC-10 (a quaternized
15 polyacrylate), Celquat L200 and Chitosan PCA.

Waxes

When it is desired to opacify the compositions of the
20 invention, so that they look like traditional hair conditioners, waxes can be added to said compositions. Such waxes may be selected from the group consisting of paraffin wax, beeswax, microcrystalline wax, ozokerite wax, carnauba wax, and candelilla wax, and mixtures thereof. Mixed
25 hydrocarbon silicone waxes may also be used. Most preferred is paraffin wax. Paraffin waxes can include Paraffin Wax 206 which melts at 50 to 53°C, Paraffin Wax 1275 which melts at 53 to 58°C, and Paraffin Wax 674 which melts at 69 to 73°C. As noted above such waxes opacify compositions of the
30 invention. However, such waxes do not affect hair body

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attributes, as do fatty alcohols that have been traditionally used in hair conditioning compositions.

Other Ingredients

5

Compositions of the invention can optionally include pearlescent aids such as ethylene glycol distearate; preservatives such as benzyl alcohol, methyl paraben, propyl paraben, and imidazolidinyl urea; pH adjusting agents such
10 as citric acid, sodium citrate, succinic acid, phosphoric acid, sodium hydroxide, and sodium carbonate; coloring agents such as FD&C or D&C dyes; and perfumes.

Ranges Of Ingredients Which May Be Used In Compositions Of

15 The Invention

Ingredients in the compositions of the invention may fall within the following ranges:

- 20 a) silicone quaternary compound, from about 0.1 to about 6%;
- b) cationic thickener, from about 0.25 to about 5%;
- c) optional volatile silicone, from about 0.2 to about 6%;
- d) optionally water soluble styling resin, from about 0.2
25 to about 8%;
- e) optional other silicone from about 0.2 to about 6%;
- f) optional wax from about 0.1 to about 8%;
- g) carrier, qs.

30 Ingredients in the compositions of the invention more preferably fall within the following ranges:

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- a) silicone quaternary compound, from about 0.2 to about 2%;
- b) cationic thickener from about 0.5 to about 2.5%;
- 5 c) optional volatile silicone from about 0.2 to about 4%;
- d) optionally water soluble styling resin from about 0.2 to about 4%, more preferably from about 0.2 to about 3%;
- e) optional other silicone from about 0.2 to about 4%;
- f) optional wax from about 0.25 to about 4%, more
- 10 preferably from about 0.25 to about 2%;
- g) carrier, q.s.

Method Of Using Compositions Of The Invention

- 15 The invention also relates to a method for styling and/or conditioning hair (without decreasing natural hair body) which comprises contacting said hair with an effective amount of a composition of the invention.
- 20 Typically, a rinse-out composition of the invention is worked into wet hair (immediately after a shampoo and rinse) usually with the fingers; the composition may then be rinsed off, then the hair is combed or brushed. The hair is then dried with a towel or a blow dryer. Alternatively, a
- 25 composition of the invention may be applied to dry hair simultaneously with the application of water. Alternatively, compositions of the invention may be applied to dry hair and then afterwards additional water may be applied to the hair in a rinsing step. These rinse-out
- 30 compositions of the invention supply a conditioning benefit to the hair.

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Compositions of the invention can also be leave-on conditioners. Such compositions are typically applied with the fingers to wet hairs, or to dry hair; or to dry hair that is subsequently wetted followed by working the hair
5 with a comb or a brush. The composition is then left in the hair and the hair may dried with a towel or a blow dryer. These leave-on compositions of the invention supply a conditioning benefit to the hair. Where these leave-on compositions of the invention may also contain a styling
10 agent, said compositions will also supply a styling benefit to the hair.

The following specific compositions of the invention were made. The examples that follow are intended to illustrate
15 the invention without in any way being limiting in nature.

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Examples

INGREDIENTS	WEIGHT PERCENT OF INGREDIENTS		
	EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
QUATERNIUM 80	0.33	1.0	0.63
DC 245 FLUID	0.33	1.0	4.38
SALCARE SC 96	0.33	1.0	2.0
FRAGRANCE	0	0	0.5
WATER	99.01	97	92.49
TOTAL	100	100	100

INGREDIENTS	WEIGHT PERCENT OF INGREDIENTS	
	EXAMPLE 4	EXAMPLE 5
Water	93.53	86.78
Quaternium-80	0.3	0.3
Paraffin Wax 206	0.85	0.81
Beeswax	0	0.04
Salcare SC 96	1.67	1.67
DC245 Fluid	2.5	2.5
Preservative	0.2	0.2
Fragrance	0.2	0.2
PVP/VA	0.75	7.5
TOTAL	100	100

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- 20 -

The compositions of examples 4 and 5 were made as follows:

- 1) A premix of pvp/va and deionized water was made.
- 2) The water was heated to 82°C.
- 5 3) The wax was melted fully. Quaternium-80 was added.
- 4) The mixing speed was increased to 1800 rpm.
- 5) The mixture was checked for particles.
- 6) The batch was cooled slowly.
- 7) The premix blend was added at 38°C.
- 10 8) Other ingredients were added at about 32°C.

INGREDIENTS	WEIGHT PERCENT OF INGREDIENTS	
	EXAMPLE 6	EXAMPLE 7
Quaternium-80	0.5	0.495
DC 245 fluid	4.0	2.48
Salcare SC 96 50%	3.3	2.35
Fragrance	0.5	0.4
Paraffin Wax	1.7	1.0
Preservative	0.3	0.3
Water	89.7	91.975
Dow DC 929, 35%	0	1.0
TOTAL	100	100

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INGREDIENTS	WEIGHT PERCENT OF INGREDIENTS	
	EXAMPLE 8	EXAMPLE 9
Quaternium-80	0.5	0.5
DC 245 fluid	2.0	4.0
Salcare SC 96 50%	1.15	1.3
Fragrance	0.125	0.05
Preservative	0.2	0.2
Water	96.025	93.95
TOTAL	100	100

Benefits Of Compositions Of The Invention

5

Wet combing studies have shown that compositions of the invention impart good wet combing properties and conditioning properties to the hair.

10 Trained sensory panels could be used to show that repeated daily use of rinse-out compositions of the invention leave hair with more body and styleability than conditioners containing fatty alcohols.

15 Trained sensory could be used to show that repeated daily use of leave-on compositions of the invention leave hair with more body and style than conditioners containing fatty alcohols.

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CLAIMS

1. A hair conditioning composition comprising

- 5 a) a silicone quaternary compound;
 b) a cationic thickener; and
 c) water or a hydroalcoholic solvent;

and which is substantially lacking in fatty alcohol.

10

2. A composition according to claim 1, in which the
silicone quaternary compound is present in an amount of
from 0.1 to 6%.

15 3. A composition according to claim 1 or claim 2, in which
the cationic thickener is present in an amount of from
0.25 to 5%.

4. A composition according to any preceding claim, in
20 which the silicone quaternary compound is Quaternium-
80.

5. A composition according to any preceding claim 1, in
which the cationic thickener is dimethylammonium
25 chloride acrylamide.

6. A composition according to any one of claims 1 to 4, in
which the cationic thickener is a copolymer of
acrylamidylpropyltrimonium chloride.

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7. A composition according to any one of claims 1 to 4, in which the cationic thickener is N,N,N-trimethyl-2((methyl-1-oxo-2-propenyl)oxy) chloride polymer.
- 5 8. A composition according to any preceding claim 1, which further comprises from 0.2 to 8% of a water-soluble styling resin.
- 10 9. A composition according to claim 8, in which the styling resin is a polyvinyl pyrrolidone/vinyl acetate copolymer.
10. A composition according to any preceding claim, which further comprises from 0.1% to 8% of a wax.
- 15 11. A composition according to any preceding claim, which further comprises an additional non-quaternized silicone.
- 20 12. A composition according to claim 11, in which the additional silicone is selected from the group consisting of polyalkylsiloxanes, polyalkylaryl siloxanes, dimethicone copolyols, alkylamino substituted silicones, silicone gums, crosslinked
25 polymeric siloxanes, tospears and mixtures thereof.
13. A method for conditioning hair that comprises contacting the hair with an effective amount of a composition according to any one of claims 1 to 12.

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(71) Applicant (for AE, AG, AU, BB, BZ, CA, CY, GB, GD, GH, GM, IE, IL, KE, LC, LK, LS, MN, MW, NZ, SD, SG, SL, SZ, TT, TZ, UG, ZA, ZW only): UNILEVER PLC [GB/GB]; Unilever House, Blackfriars, London EC4P 4BQ (GB).

(71) Applicant (for AL, AM, AT, AZ, BA, BE, BF, BG, BJ, BR, BY, CF, CG, CH, CI, CM, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, FR, GA, GE, GN, GR, GW, HR, HU, ID, IS, IT, JP, KG, KP, KR, KZ, LR, LT, LU, LV, MA, MC, MD, MG, MK, ML, MR, MX, MZ, NE, NL, NO, PL, PT, RO, RU, SE, SI, SK, SN, TD, TG, TJ, TM, TR, UA, UZ, VN, YU only): UNILEVER NV [NL/NL]; Weena 455, NL-3013 AL Rotterdam (NL).

(71) Applicant (for IN only): HINDUSTAN LEVER LIMITED [IN/IN]; Hindustan Lever House, 165/166 Backbay Reclamation, Mumbai 400 020, Maharashtra (IN).

(72) Inventors: MA, Zhuning; Unilever Home & Personal Care USA, 3100 East Golf Road, Rolling Meadows, Chicago, IL 60008 (US). WYDILA, John, Edward; 1261 Cranbrook Drive, Schaumburg, IL 60193 (US). DAILEY,

Mark; Unilever Home & Personal Care USA, 3100 East Golf Road, Rolling Meadows, Chicago, IL 60008 (US). BRANDT, Lorelei, Marie; Unilever Home & Personal Care USA, 3100 East Golf Road, Rolling Meadows, Chicago, IL 60008 (US). NEILL, Paul, Howard; Unilever Home & Personal Care USA, 3100 East Golf Road, Rolling Meadows, Chicago, IL 60008 (US).

(74) Agent: TANSLEY, Sally, Elizabeth; Unilever PLC, Patent Department, Colworth House, Sharnbrook, Bedford, Bedfordshire MK44 1LQ (GB).

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(54) Title: LEAVE-ON OR RINSE-OUT HAIR CARE CONDITIONER COMPOSITIONS CONTAINING SILICONE QUATERNARY COMPOUNDS AND THICKENERS

(57) Abstract: The present invention relates to a leave-on or rinse-out hair conditioning or styling aid composition that comprises: a) a silicone quaternary compound, b) a cationic thickener, and c) a carrier, wherein said carrier is water, or a hydroalcoholic solvent; and wherein said composition is substantially lacking in fatty alcohol.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 94 01076 A (HOLLENBERG DETLEF ;HENKEL KGAA (DE); SEIDEL KURT (DE); MUELLER REI) 20 January 1994 (1994-01-20) page 7, line 1 - line 8; example 4 page 12, line 1 -page 13, line 2; claims 1,7	1,2,4, 8-13
A	US 6 028 041 A (DECOSTER SANDRINE ET AL) 22 February 2000 (2000-02-22) column 10, line 62 -column 11, line 15 column 15, line 13 - line 19; claims 1,13,15,20	1-3,5, 11-13
A	US 5 976 557 A (HOESSEL PETER ET AL) 2 November 1999 (1999-11-02) column 10, line 10 - line 17; claim 1; table 1	1,4, 10-13

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel (+31-70) 340-2040. Tx. 31 651 epo nl.
Fax: (+31-70) 340-3016

Authorized officer

Angiolini, D

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9401076	A	20-01-1994	DE 4221914 A1	05-01-1994
			DE 4232512 A1	31-03-1994
			DE 4234405 A1	14-04-1994
			DE 4234413 A1	14-04-1994
			AT 164755 T	15-04-1998
			AT 161709 T	15-01-1998
			CA 2139496 A1	20-01-1994
			DE 59307950 D1	12-02-1998
			DE 59308395 D1	14-05-1998
			WO 9401076 A1	20-01-1994
			WO 9401077 A1	20-01-1994
			WO 9401078 A1	20-01-1994
			EP 0648103 A1	19-04-1995
			EP 0648104 A1	19-04-1995
			ES 2114057 T3	16-05-1998
			ES 2111752 T3	16-03-1998
			GR 3026138 T3	29-05-1998
			AT 140383 T	15-08-1996
			AT 147258 T	15-01-1997
			CA 2145861 A1	14-04-1994
			CN 1085775 A	27-04-1994
			CN 1089134 A , B	13-07-1994
			DE 59303272 D1	22-08-1996
			DE 59305092 D1	20-02-1997
			DK 662814 T3	02-12-1996
			WO 9407455 A1	14-04-1994
			WO 9407458 A1	14-04-1994
			EP 0662814 A1	19-07-1995
			EP 0662816 A1	19-07-1995
			ES 2091015 T3	16-10-1996
			GR 3020773 T3	30-11-1996
			JP 8505601 T	18-06-1996
			SI 9300479 A	30-06-1994
			SI 9300480 A	30-06-1994
			US 6056947 A	02-05-2000
			CN 1086707 A	18-05-1994
			SI 9300482 A	30-06-1994
US 6028041	A	22-02-2000	FR 2748203 A1	07-11-1997
			AU 684444 A1	11-12-1997
			BR 9700674 A	01-09-1998
			CA 2204540 A1	06-11-1997
			CN 1173322 A	18-02-1998
			EP 0811371 A2	10-12-1997
			HU 9700843 A2	02-03-1998
			JP 2996630 B2	11-01-2000
			JP 10045544 A	17-02-1998
			KR 238340 B1	02-03-2000
US 5976557	A	02-11-1999	PL 319810 A1	10-11-1997
			DE 19647858 A1	20-05-1998
			US 5720774 A	24-02-1998
			EP 0842656 A2	20-05-1998
			JP 10158150 A	16-06-1998
			US 6006136 A	21-12-1999

